

=> FILE REG

FILE 'REGISTRY' ENTERED AT 20:11:04 ON 05 NOV 2010  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2010 American Chemical Society (ACS)

=> D HIS

FILE 'LREGISTRY' ENTERED AT 19:18:01 ON 05 NOV 2010  
L1 STR

FILE 'REGISTRY' ENTERED AT 19:33:06 ON 05 NOV 2010  
L2 15 S L1

FILE 'HCA' ENTERED AT 19:34:48 ON 05 NOV 2010  
L3 75 S SKENE W?/AU  
L4 12458 S THIOPHENE#/TI  
L5 17 S L3 AND L4  
SEL L5 1-17 RN

FILE 'REGISTRY' ENTERED AT 19:35:33 ON 05 NOV 2010  
L6 160 S E1-E160  
L7 244 S L1 FUL  
SAV L7 FAN722/A

FILE 'LREGISTRY' ENTERED AT 19:43:42 ON 05 NOV 2010  
L8 STR L1

FILE 'REGISTRY' ENTERED AT 20:00:20 ON 05 NOV 2010  
L9 4 S L8 SSS SAM SUB=L7  
L10 55 S L8 SSS FUL SUB=L7  
SAV L10 FAN722A/A  
E PMS/CI

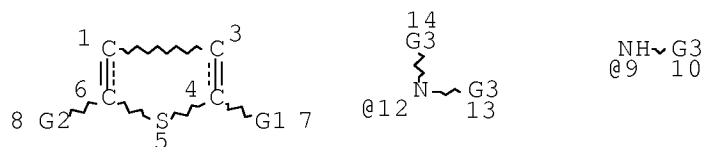
L11 1364418 S E3  
L12 25 S L10 AND L11  
L13 127 S L7 AND L11  
L14 102 S L13 NOT L12  
L15 41 POLYLINK L12  
SAV L15 FAN722B/A

FILE 'HCA' ENTERED AT 20:05:15 ON 05 NOV 2010  
L16 16 S L15  
L17 150 S L10  
L18 96544 S (ELEC# OR ELECTRIC? OR COND# OR CONDUCT?) (2A) (POLYM? OR C  
L19 10 S L17 AND L18  
L20 4 S L19 NOT L16  
L21 11 S 1802-2004/PY,PRY,AY AND L16  
L22 3 S 1802-2004/PY,PRY,AY AND L20  
L23 415219 S (ELEC# OR ELECTRIC?) (2A) (COND# OR CONDUCT?)  
L24 9 S L17 AND L23

L25                    2 S L24 NOT (L21 OR L22)  
L26                    1 S 1802-2004/PY,PRY,AY AND L25

FILE 'REGISTRY' ENTERED AT 20:11:04 ON 05 NOV 2010

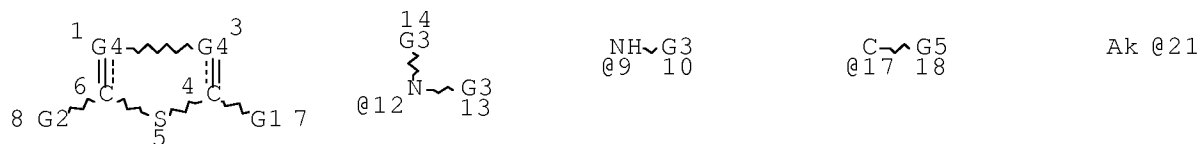
=> D L10 QUE STAT  
L1                    STR



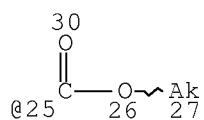
VAR G1=NH2/9/12/CHO  
VAR G2=NH2/CHO  
VAR G3=ME/ET/N-PR/I-PR/N-BU/I-BU/S-BU/T-BU  
NODE ATTRIBUTES:  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
RSPEC I  
NUMBER OF NODES IS 12

STEREO ATTRIBUTES: NONE  
L7                    244 SEA FILE=REGISTRY SSS FUL L1  
L8                    STR



Page 1-A



Page 1-B  
VAR G1=NH2/9/12  
VAR G2=NH2/CHO

VAR G3=ME/ET/N-PR/I-PR/N-BU/I-BU/S-BU/T-BU

VAR G4=CH/17

VAR G5=CN/21/25

NODE ATTRIBUTES:

CONNECT IS E2 RC AT 5

CONNECT IS E1 RC AT 21

CONNECT IS E1 RC AT 27

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 21

GGCAT IS SAT AT 27

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RSPEC I

NUMBER OF NODES IS 19

STEREO ATTRIBUTES: NONE

L10 55 SEA FILE=REGISTRY SUB=L7 SSS FUL L8

100.0% PROCESSED 92 ITERATIONS

55 ANSWERS

SEARCH TIME: 00.00.01

=> FILE HCA

FILE 'HCA' ENTERED AT 20:11:16 ON 05 NOV 2010

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

COPYRIGHT (C) 2010 AMERICAN CHEMICAL SOCIETY (ACS)

=> D L21 1-11 BIB ABS HITSTR HITRN RE

L21 ANSWER 1 OF 11 HCA COPYRIGHT 2010 ACS on STN

AN 143:173952 HCA Full-text

TI Conjugated thiophene-based oligoazomethines having conducting properties and synthesis of same

IN Skene, William G.

PA Universite de Montreal, Can.

SO PCT Int. Appl., 73 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

PATENT NO.

KIND

DATE

APPLICATION NO.

DATE

|      |                 |    |          |                |          |
|------|-----------------|----|----------|----------------|----------|
| PI   | WO 2005073265   | A1 | 20050811 | WO 2005-CA131  | 20050202 |
|      | JP 2007520602   | T  | 20070726 | JP 2006-551692 | 20050202 |
|      | US 20070287842  | A1 | 20071213 | US 2007-597722 | 20070424 |
| PRAI | US 2004-541259P | P  | 20040202 |                |          |
|      | WO 2005-CA131   | W  | 20050202 |                |          |

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OS MARPAT 143:173952

AB The present invention relates to conjugated oligomers and polymers comprising arom. thiophene cores. The conjugated materials are obtained by simple and efficient condensation of an aryl diamine and an aryl dialdehyde or a bifunctional aryl moiety comprising both an aldehyde and an amine. Condensation of the complementary moieties at temps. ranging from ambient to refluxing temps. in various solvents resulted in conjugated oligomers and polymers that can subsequently be cast into thin films. Oligomerization and polymn. can be done under mild conditions with removal of the resulting water bi-product responsible for shifting the equil. in favor of the conjugated products. The resulting conjugated compds. can be made conducting with dopants affording elec. conducting materials of either p-type or n-type conductors depending on the dopant selected.

IT ~~642499-33-0P~~, Diethyl 2,5-diaminothiophene-3,4-dicarboxylate-2,5-thiophenedicarboxaldehyde copolymer ~~642499-34-1P~~, Diethyl 2,5-diaminothiophene-3,4-dicarboxylate-2,5-thiophenedicarboxaldehyde copolymer, SRU ~~861125-43-1P~~, Didecyl 2,5-diaminothiophene-3,4-dicarboxylate-2,5-thiophenedicarboxaldehyde copolymer ~~861125-45-3P~~, Didecyl 2,5-diaminothiophene-3,4-dicarboxylate-2,5-thiophenedicarboxaldehyde copolymer, SRU  
(prodn. of elec. conductive conjugated polythiophene-polyazomethines)

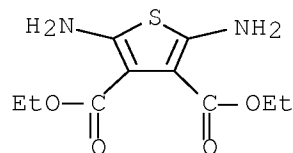
RN 642499-33-0 HCA

CN 3,4-Thiophenedicarboxylic acid, 2,5-diamino-, diethyl ester, polymer with 2,5-thiophenedicarboxaldehyde (9CI) (CA INDEX NAME)

CM 1

CRN 80691-81-2

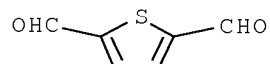
CMF C10 H14 N2 O4 S



CM 2

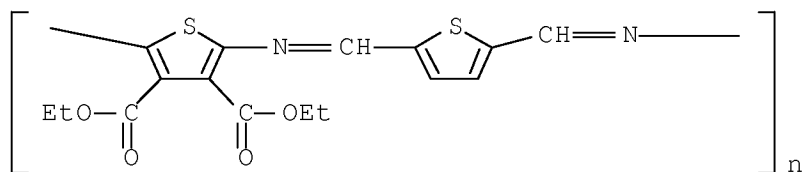
CRN 932-95-6

CMF C6 H4 O2 S



RN 642499-34-1 HCA

CN Poly[[3,4-bis(ethoxycarbonyl)-2,5-thiophenediyl]nitrilomethylidyne-2,5-thiophenediylmethylidynenitrilo] (9CI) (CA INDEX NAME)



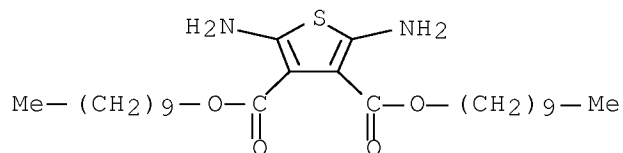
RN 861125-43-1 HCA

CN 3,4-Thiophenedicarboxylic acid, 2,5-diamino-, didecyl ester, polymer with 2,5-thiophenedicarboxaldehyde (9CI) (CA INDEX NAME)

CM 1

CRN 642499-07-8

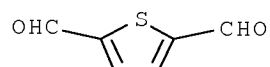
CMF C26 H46 N2 O4 S



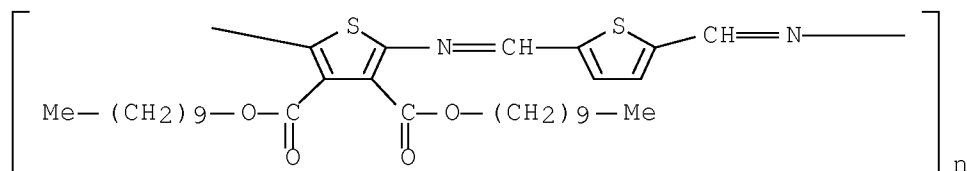
CM 2

CRN 932-95-6

CMF C6 H4 O2 S



RN 861125-45-3 HCA  
 CN Poly[[3,4-bis[(decyloxy)carbonyl]-2,5-thiophenediyl]nitrilomethylidyne-2,5-thiophenediylmethylidynenitrilo] (9CI) (CA INDEX NAME)



IT 642499-33-0P, Diethyl 2,5-diaminothiophene-3,4-dicarboxylate-2,5-thiophenedicarboxaldehyde copolymer 642499-34-1P, Diethyl 2,5-diaminothiophene-3,4-dicarboxylate-2,5-thiophenedicarboxaldehyde copolymer, SRU 861125-43-1P, Didecyl 2,5-diaminothiophene-3,4-dicarboxylate-2,5-thiophenedicarboxaldehyde copolymer 861125-45-3P, Didecyl 2,5-diaminothiophene-3,4-dicarboxylate-2,5-thiophenedicarboxaldehyde copolymer, SRU  
 (prodn. of elec. conductive conjugated polythiophene-polyazomethines)

RE CITED REFERENCES

- (1) Skene, W; Polymer Preprints 2004, V45(1), P252 HCA
- (2) Skene, W; Polymer Preprints 2004, V45(2), P563 HCA
- (3) Skene, W; Polymeric Materials: Science and Engineering 2004, V91, P326 HCA
- (4) Vegh, D; CAPLUS 1996:246277

OSC.G 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD (7 CITINGS)

L21 ANSWER 2 OF 11 HCA COPYRIGHT 2010 ACS on STN

AN 140:94486 HCA Full-text

TI Polyhydrazones and polyimines exhibiting reversible formation and component exchange

IN Lehn, Jean-Marie; Skene, W. G.

PA Fr.

SO PCT Int. Appl., 36 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

|      | PATENT NO.      | KIND | DATE     | APPLICATION NO. | DATE     |
|------|-----------------|------|----------|-----------------|----------|
|      | -----           | ---  | -----    | -----           | -----    |
| PI   | WO 2004003044   | A2   | 20040108 | WO 2003-IB2454  | 20030624 |
|      | WO 2004003044   | A3   | 20040513 |                 |          |
|      | AU 2003240211   | A1   | 20040119 | AU 2003-240211  | 20030624 |
| PRAI | US 2002-392308P | P    | 20020628 |                 |          |
|      | WO 2003-IB2454  | W    | 20030624 |                 |          |

AB Alternating copolymers produced by polycondensation of dihydrazides or diamines with dialdehydes reversibly exchange either one or both of the

repeating monomer units in the presence of different monomer units. Upon exchange of one of the repeating monomer units, the original monomer unit displaced can be reintroduced into the polymer, or the remaining unexchanged original monomer unit may also be interchanged. The polymers subjected to monomer exchange/interchange exhibit vastly different phys. properties than those of the original unexchanged polymers. These dynamic, reversible polymers are able to incorporate, decorporate or reshuffle the constituting monomers with respect to environmental phys. or chem. factors, such as heat, light, or chem. entities. The polymers are defined as dynamers and represent a group of adaptive materials. Thus, a 50%-aq. soln. of glutaric dialdehyde (464) was added to di-Et ester of 2,5-diaminothiophene-3,4-dicarboxylic acid (600 mg) in ethanol (80 mL), the mixt. was stirred at room temp. for two days, followed by addn. of a few drops of acetic acid forming a red ppt. sol. in DMSO and DMF.

IT 642499-35-2P 642499-36-3P 642499-39-6P  
 642499-40-9P 642499-67-0P 642499-68-1P  
 642499-73-8P 642499-74-9P 642499-75-0P  
 642499-76-1P 642499-79-4P

(polyhydrazones and polyimines exhibiting reversible formation and component exchange)

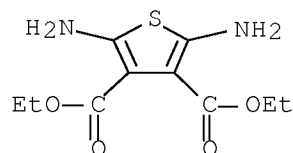
RN 642499-35-2 HCA

CN 3,4-Thiophenedicarboxylic acid, 2,5-diamino-, diethyl ester, polymer with pentanedial (9CI) (CA INDEX NAME)

CM 1

CRN 80691-81-2

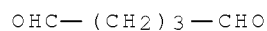
CMF C10 H14 N2 O4 S



CM 2

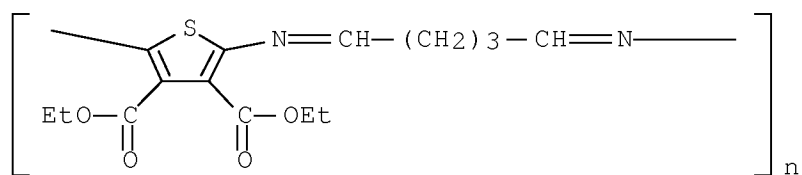
CRN 111-30-8

CMF C5 H8 O2



RN 642499-36-3 HCA

CN Poly[[3,4-bis(ethoxycarbonyl)-2,5-thiophenediyl]nitrilo-1,5-pentanediyldenenitrilo] (9CI) (CA INDEX NAME)



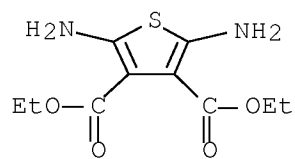
RN 642499-39-6 HCA

CN 3,4-Thiophenedicarboxylic acid, 2,5-diamino-, diethyl ester, polymer with (2E,4E,6E,8E,10E,12E,14E)-2,6,11,15-tetramethyl-2,4,6,8,10,12,14-hexadecaheptaenedial (9CI) (CA INDEX NAME)

CM 1

CRN 80691-81-2

CMF C10 H14 N2 O4 S

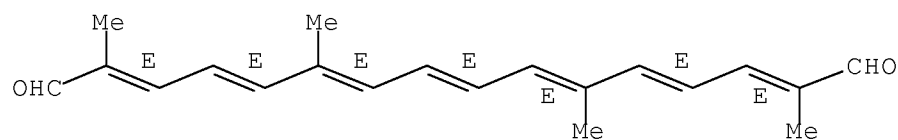


CM 2

CRN 502-70-5

CMF C20 H24 O2

Double bond geometry as shown.

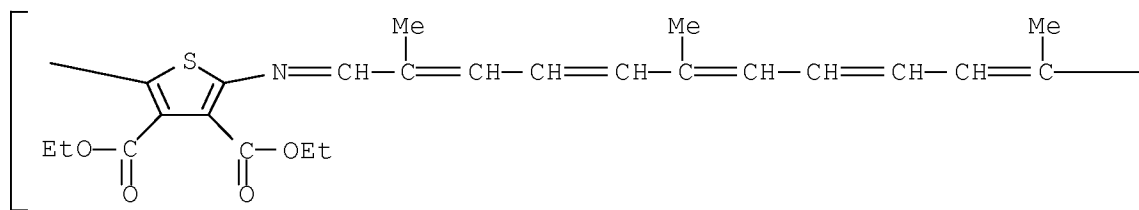


RN 642499-40-9 HCA

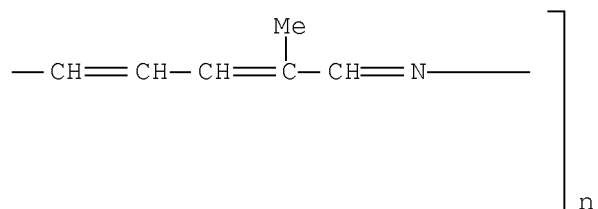
CN Poly[[3,4-bis(ethoxycarbonyl)-2,5-thiophenediyl]nitrilo[(2E,4E,6E,8E,10E,12E,14E)-2,6,11,15-tetramethyl-2,4,6,8,10,12,14-hexadecaheptaene-1,16-diylidene]nitrilo] (9CI) (CA INDEX NAME)



PAGE 1-A



PAGE 1-B



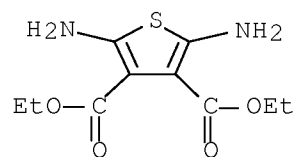
RN 642499-67-0 HCA

CN 3,4-Thiophenedicarboxylic acid, 2,5-diamino-, diethyl ester, polymer with ethanedial (9CI) (CA INDEX NAME)

CM 1

CRN 80691-81-2

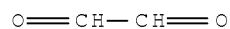
CMF C10 H14 N2 O4 S



CM 2

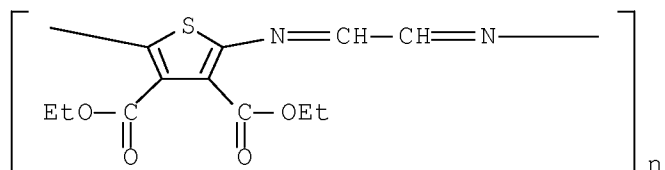
CRN 107-22-2

CMF C2 H2 O2



RN 642499-68-1 HCA

CN Poly[[3,4-bis(ethoxycarbonyl)-2,5-thiophenediyl]nitrilo-1,2-ethanediylidenenitrilo] (9CI) (CA INDEX NAME)



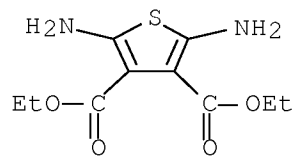
RN 642499-73-8 HCA

CN 3,4-Thiophenedicarboxylic acid, 2,5-diamino-, diethyl ester, polymer with 1,2-ethanediamine and 2,5-thiophenedicarboxaldehyde (9CI) (CA INDEX NAME)

CM 1

CRN 80691-81-2

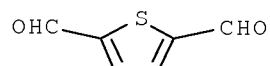
CMF C10 H14 N2 O4 S



CM 2

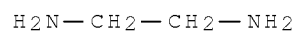
CRN 932-95-6

CMF C6 H4 O2 S



CM 3

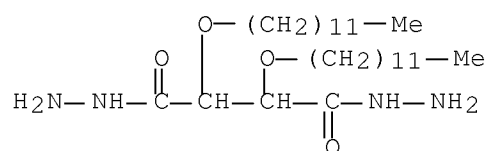
CRN 107-15-3  
CMF C2 H8 N2



RN 642499-74-9 HCA  
CN 3,4-Thiophenedicarboxylic acid, 2,5-diamino-, diethyl ester, polymer  
with 2,3-bis(dodecyloxy)butanedioic acid dihydrazide and  
2,5-thiophenedicarboxaldehyde (9CI) (CA INDEX NAME)

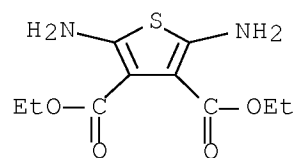
CM 1

CRN 642499-03-4  
CMF C28 H58 N4 O4



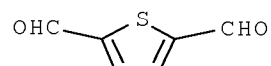
CM 2

CRN 80691-81-2  
CMF C10 H14 N2 O4 S

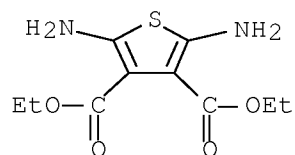


CM 3

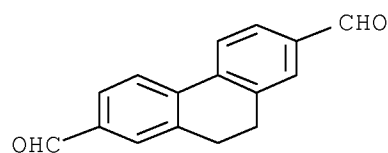
CRN 932-95-6  
CMF C6 H4 O2 S



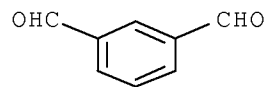
RN 642499-75-0 HCA  
 CN 3,4-Thiophenedicarboxylic acid, 2,5-diamino-, diethyl ester, polymer  
 with 1,3-benzenedicarboxaldehyde and  
 9,10-dihydro-2,7-phenanthrenedicarboxaldehyde (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 80691-81-2  
 CMF C10 H14 N2 O4 S



CM 2  
 CRN 42480-96-6  
 CMF C16 H12 O2



CM 3  
 CRN 626-19-7  
 CMF C8 H6 O2



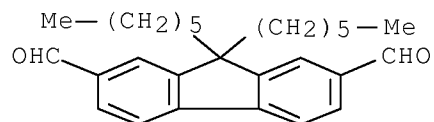
RN 642499-76-1 HCA  
 CN 3,4-Thiophenedicarboxylic acid, 2,5-diamino-, diethyl ester, polymer

with 1,4-cyclohexanediamine and  
9,9-dihexyl-9H-fluorene-2,7-dicarboxaldehyde (9CI) (CA INDEX NAME)

CM 1

CRN 295796-57-5

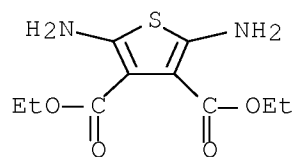
CMF C27 H34 O2



CM 2

CRN 80691-81-2

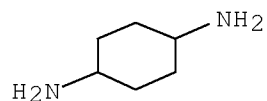
CMF C10 H14 N2 O4 S



CM 3

CRN 3114-70-3

CMF C6 H14 N2

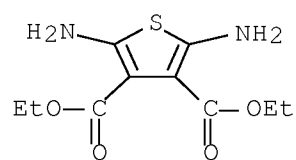


RN 642499-79-4 HCA

CN 3,4-Thiophenedicarboxylic acid, 2,5-diamino-, diethyl ester, polymer  
with 1,3-benzenedicarboxaldehyde, 1,2-ethanediamine and  
2,5-thiophenedicarboxaldehyde (9CI) (CA INDEX NAME)

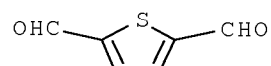
CM 1

CRN 80691-81-2  
CMF C10 H14 N2 O4 S



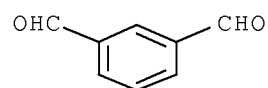
CM 2

CRN 932-95-6  
CMF C6 H4 O2 S



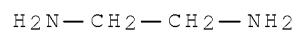
CM 3

CRN 626-19-7  
CMF C8 H6 O2



CM 4

CRN 107-15-3  
CMF C2 H8 N2



IT 642499-31-8P 642499-32-9P 642499-33-0P  
642499-34-1P

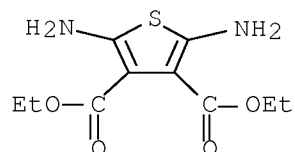
(polyhydrazones and polyimines exhibiting reversible formation and component exchange)

RN 642499-31-8 HCA  
 CN 3,4-Thiophenedicarboxylic acid, 2,5-diamino-, diethyl ester, polymer  
 with 9,10-dihydro-2,7-phenanthrenedicarboxaldehyde (9CI) (CA INDEX  
 NAME)

CM 1

CRN 80691-81-2

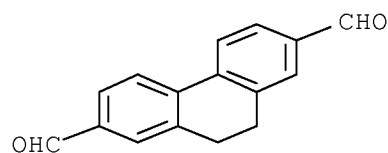
CMF C10 H14 N2 O4 S



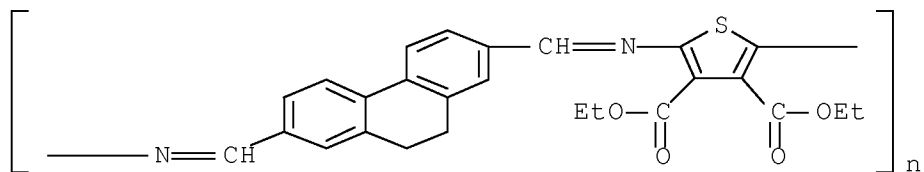
CM 2

CRN 42480-96-6

CMF C16 H12 O2



RN 642499-32-9 HCA  
 CN Poly[[3,4-bis(ethoxycarbonyl)-2,5-  
 thiophenediyl]nitrilomethylidyne(9,10-dihydro-2,7-  
 phenanthrenediyl)methylidynenitrilo] (9CI) (CA INDEX NAME)

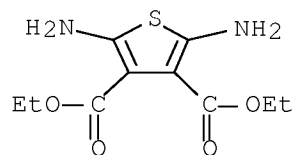


RN 642499-33-0 HCA  
 CN 3,4-Thiophenedicarboxylic acid, 2,5-diamino-, diethyl ester, polymer  
 with 2,5-thiophenedicarboxaldehyde (9CI) (CA INDEX NAME)

CM 1

CRN 80691-81-2

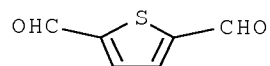
CMF C10 H14 N2 O4 S



CM 2

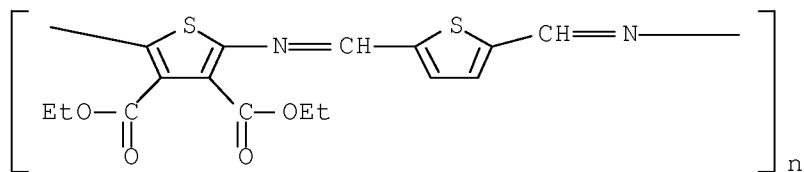
CRN 932-95-6

CMF C6 H4 O2 S



RN 642499-34-1 HCA

CN Poly[[3,4-bis(ethoxycarbonyl)-2,5-thiophenediyl]nitrilomethyldiylne-2,5-thiophenediylmethyldynenitrilo] (9CI) (CA INDEX NAME)



IT 642499-35-2P 642499-36-3P 642499-39-6P  
642499-40-9P 642499-67-0P 642499-68-1P  
642499-73-8P 642499-74-9P 642499-75-0P  
642499-76-1P 642499-79-4P

(polyhydrazones and polyimines exhibiting reversible formation and component exchange)

IT 642499-31-8P 642499-32-9P 642499-33-0P  
642499-34-1P

(polyhydrazones and polyimines exhibiting reversible formation and component exchange)

RE CITED REFERENCES



(1) Anon; US 3354122 A HCA

(2) Anon; US 3506614 A

OSC.G 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)

L21 ANSWER 3 OF 11 HCA COPYRIGHT 2010 ACS on STN

AN 135:181035 HCA Full-text

TI A study of a thienylene-phenylene polyazomethine and its copper complex

AU Khalid, Maarib A.; El-Shekeil, Ali G.; Al-Yusufy, Fatma A.

CS Faculty of Science, Department of Physics, Sana'a University, Sana'a, Yemen

SO European Polymer Journal (2001), 37(7), 1423-1431

CODEN: EUPJAG; ISSN: 0014-3057

PB Elsevier Science Ltd.

DT Journal

LA English

AB Polycondensation of terephthalaldehyde and 2,5-diamino-3,4-dicyanothiophene was carried out to synthesize a thienylene-phenylene polyazomethine. The polyazomethine and its Cu complex were studied using elemental analyses, FTIR and UV-VIS spectra, soly., inherent viscosity, x-ray diffraction anal., <sup>1</sup>H NMR, and thermal analyses (TGA and DSC). The bulk d.c. elec. cond. of the polyazomethine and its Cu-complex was measured as a function of temp. at 300-500 K. Semi-empirical calcns. for the two (anti/gauche) conformers of the polyazomethine were carried out. A model is proposed based on band theory to explain the mechanism of bulk d.c. elec. cond.

IT ~~355834-28-5P~~ ~~355834-29-6P~~

(prepn. and electron configuration and cond. of  
thienylene-phenylene polyazomethine and its copper complex)

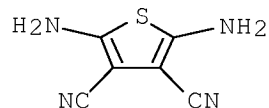
RN 355834-28-5 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
1,4-benzenedicarboxaldehyde (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

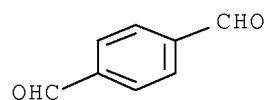
CMF C6 H4 N4 S



CM 2

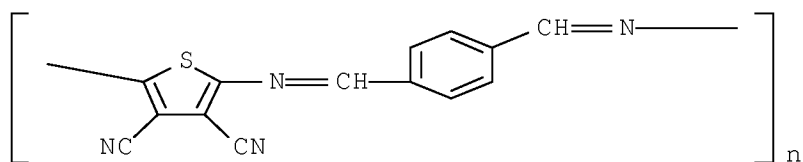
CRN 623-27-8

CMF C8 H6 O2



RN 355834-29-6 HCA

CN Poly[(3,4-dicyano-2,5-thiophenediyl)nitrilomethylidyne-1,4-phenylenemethylidynenitrilo] (9CI) (CA INDEX NAME)



IT 355834-28-5DP, copper complexes 355834-29-6DP, copper complexes  
(prepn. and electron configuration and cond. of thienylene-phenylene polyazomethine and its copper complex)

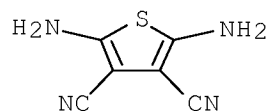
RN 355834-28-5 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with 1,4-benzenedicarboxaldehyde (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

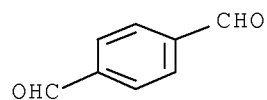
CMF C6 H4 N4 S



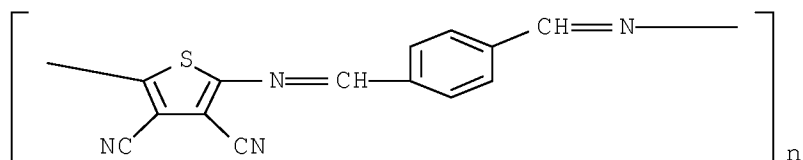
CM 2

CRN 623-27-8

CMF C8 H6 O2



RN 355834-29-6 HCA  
 CN Poly[(3,4-dicyano-2,5-thiophenediyl)nitrilomethylidyne-1,4-phenylenemethylidynenitrilo] (9CI) (CA INDEX NAME)



IT 355834-28-5P 355834-29-6P  
 (prepn. and electron configuration and cond. of  
 thienylene-phenylene polyazomethine and its copper complex)  
 IT 355834-28-5DP, copper complexes 355834-29-6DP,  
 copper complexes  
 (prepn. and electron configuration and cond. of  
 thienylene-phenylene polyazomethine and its copper complex)

RE CITED REFERENCES

- (1) Adams, R; J Am Chem Soc 1923, V45, P521 HCA
- (2) Addison, A; A handy and systematic catalog of NMR spectra 1980
- (3) Andreatta, A; J Mater Res Soc Symp Proc 1990, V173, P269 HCA
- (4) Barbera, J; Liq Crys 1992, V12, P37 HCA
- (5) Cerrada, P; Macromolecules 1999, V32, P3565 HCA
- (6) Chien, J; J Polym Sci 1985, V23, P1383 HCA
- (7) Destri, S; Macromolecules 1998, V31, P1079 HCA
- (8) Destri, S; Macromolecules 1999, V32, P353 HCA
- (9) Destri, S; Opt Mater 1998, V9, P411 HCA
- (10) Destri, S; Synth Met 1995, V75, P25 HCA
- (11) Destri, S; Synth Met 1995, V69, P287 HCA
- (12) Destri, S; Synth Met 1997, V84, P219 HCA
- (13) Dubistky, Y; Synth Met 1993, V55, P1266
- (14) El-Shekeil, A; Polym Int 1997, V42, P39 HCA
- (15) El-Shekeil, A; Polymer 1999, V40, P2879 HCA
- (16) Hui, Z; Eur Polym J 1992, V28, P1461 HCA
- (17) Matsomoto, T; Macromolecules 1997, V30, P3547
- (18) Mealares, C; Polym Int 1996, V40, P33 HCA
- (19) Moulton, J; Polymer 1992, V33, P2340 HCA
- (20) Ng, S; Polymer 1998, V39, P4963 HCA
- (21) Olinga, T; Macromolecules 1998, V31, P1070 HCA
- (22) Oriol, L; Macromolecules 1994, V27, P1869 HCA
- (23) Puertolas, J; Macromolecules 1997, V30, P773 HCA
- (24) Rabjohn, N; Organic Synthesis, Col v 1963, VIV, P243
- (25) Saegusa, Y; J Polym Sci Part A Polym Chem 1992, V30, P1396
- (26) Silverstein, R; Spectrometric identification of organic compounds 1981
- (27) Spangler, C; Polymer 1989, V30, P1166 HCA

(28) Thomas, O; Macromolecules 1998, V31, P2676 HCA

(29) Wang, C; Macromolecules 1996, V29, P3147 HCA

(30) Weaver, M; Syn Met 1996, V83, P61 HCA

OSC.G 11 THERE ARE 11 CAPLUS RECORDS THAT CITE THIS RECORD (11 CITINGS)

L21 ANSWER 4 OF 11 HCA COPYRIGHT 2010 ACS on STN

AN 96:200709 HCA Full-text

OREF 96:33119a,33122a

TI Thermostable composition

IN Chernikhov, A. Ya.; Yakovlev, M. N.; Rogov, N. S.

PA USSR

SO Fr. Demande, 77 pp.

CODEN: FRXXBL

DT Patent

LA French

FAN.CNT 1

|      | PATENT NO.   | KIND | DATE     | APPLICATION NO. | DATE     |
|------|--------------|------|----------|-----------------|----------|
|      | -----        | ---- | -----    | -----           | -----    |
| PI   | FR 2476068   | A1   | 19810821 | FR 1979-4447    | 19790221 |
|      | FR 2476068   | B1   | 19821203 |                 |          |
| PRAI | FR 1979-4447 |      | 19790221 |                 |          |

AB Org. compds. which contain Si, halogen, N, S, P, B, and/or O atoms and contain NH<sub>2</sub>, OH, SH, NCO, NSO, and/or NCS groups as well as cyano and/or ethynyl groups are mixed with a filler, such as TiO<sub>2</sub>, MoS<sub>2</sub>, Al, W, Co, Cu, graphite, glass fibers, asbestos, quartz, or silica, and polymd. to prep. ≈110 heat-resistant resins which are esp. useful as binders (e.g., for abrasive particles such as diamonds and Si carbide) and adhesives. In some cases, the resins also contain a polyimide, polybenzoxazole, polyoxadiazole, polythioarylene, or similar resin which improves their mech. properties and heat resistance. Thus, 0.4 g powd. polybenzoxazole prepd. from bis(4-amino-3-hydroxyphenyl)methane and isophthalic acid was mixed with asbestos 0.8, 2,5-diamino-3,4-dicyanothiophene 0.24, and bis(4-isocyanatophenyl)methane 0.36 g and cured in a mold for 90, 90, and 30 min at 190, 250, and 300°, resp. The compressive strength (kg/cm<sup>2</sup>) of the molding was 1000 initially and 1150 after 500 h at 300° in air.

IT 73417-95-5P 74159-20-9P 75609-47-1P  
75610-58-1P

(prepn. of heat-resistant, fillers for)

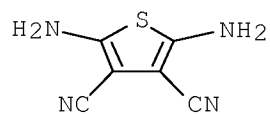
RN 73417-95-5 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
1,1'-methylenebis[4-isocyanatobenzene] (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

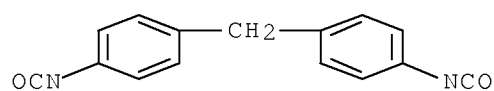
CMF C6 H4 N4 S



CM 2

CRN 101-68-8

CMF C15 H10 N2 O2



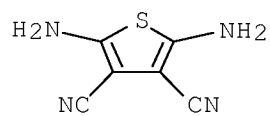
RN 74159-20-9 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
1,1'-oxybis[4-isocyanatobenzene] (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

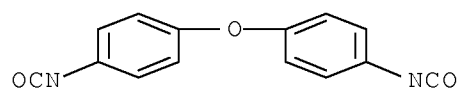
CMF C6 H4 N4 S



CM 2

CRN 4128-73-8

CMF C14 H8 N2 O3



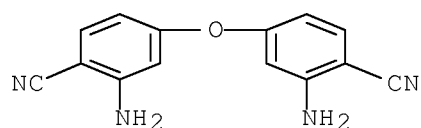
RN 75609-47-1 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
4,4'-oxybis[2-aminobenzonitrile] and 1,1'-oxybis[4-isocyanatobenzene]  
(9CI) (CA INDEX NAME)

CM 1

CRN 37705-84-3

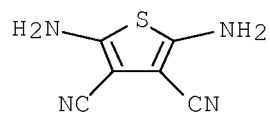
CMF C14 H10 N4 O



CM 2

CRN 17989-89-8

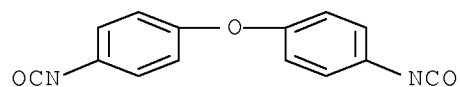
CMF C6 H4 N4 S



CM 3

CRN 4128-73-8

CMF C14 H8 N2 O3



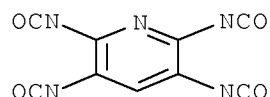
RN 75610-58-1 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
2,3,5,6-tetraisocyanatopyridine (9CI) (CA INDEX NAME)

CM 1

CRN 75610-57-0

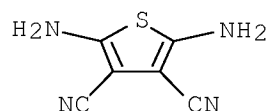
CMF C9 H N5 O4



CM 2

CRN 17989-89-8

CMF C6 H4 N4 S



IT 73417-95-5P 74159-20-9P 75609-47-1P  
75610-58-1P

(prepn. of heat-resistant, fillers for)

RE CITED REFERENCES

(1) Anon; US 3657186 A HCA

OSC.G 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

L21 ANSWER 5 OF 11 HCA COPYRIGHT 2010 ACS on STN

AN 93:240508 HCA Full-text

OREF 93:38553a,38556a

TI Heat-resistant polymeric material

IN Chernikhov, A. Ya.; Yakovlev, M. N.; Rogov, N. S.; Petrova, A. P.;  
Martirosov, E. B.; Gul, V. E.

PA USSR

SO Ger. Offen., 83 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

|      | PATENT NO.      | KIND | DATE     | APPLICATION NO. | DATE     |
|------|-----------------|------|----------|-----------------|----------|
|      | -----           | ---- | -----    | -----           | -----    |
| PI   | DE 2907195      | A1   | 19800828 | DE 1979-2907195 | 19790223 |
|      | JP 55118914     | A    | 19800912 | JP 1979-24370   | 19790302 |
|      | JP 60021647     | B    | 19850529 |                 |          |
|      | US 4458041      | A    | 19840703 | US 1980-199116  | 19801017 |
| PRAI | US 1979-8562    | A1   | 19790201 |                 |          |
|      | DE 1979-2907195 | A    | 19790223 |                 |          |

OS MARPAT 93:240508

AB Monomers (and, in some cases, low-mol.-wt. polymers) contg. NH<sub>2</sub>, OH, SH,  
NCO, NSO, and/or NCS groups as well as cyano and/or ethynyl groups are

polymd. to prep. .apprx.110 polymers which are resistant to degrdn. at 300-400°. In most cases, the monomers and low-mol.-wt. polymers are mixed with fillers such as TiO<sub>2</sub>, powd. metals, glass fibers, carbon fibers, graphite, powd. polyoxadiazole, polybenzoxazole, polyimide, or fluoropolymer, asbestos, MoS<sub>2</sub>, BN, silica, diamond dust, and/or SiC. The heat-resistant polymeric materials are useful as moldings, adhesives, grinding disks, etc. Thus, a mixt. of bis(3-amino-4-cyanophenyl) ether 0.16, bis(4-isocyanatophenyl)methane 0.16, graphite 0.2, and a powd. poly-1,3,4-oxadiazole 0.78 g was molded at 130-200°/245 bars, demolded, and heated at 300° for 30 min to prep. a molding which had compressive strength (MN/m<sup>2</sup>) 96 initially and 108 after 500 h in air at 300° and had flexural strength (MN/m<sup>2</sup>) 31 initially and 35 after heat aging.

IT 73417-95-5P 74159-20-9P 75609-47-1P  
75610-58-1P

(manuf. of heat-resistant, filler-contg.)

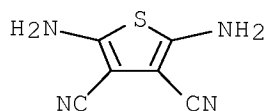
RN 73417-95-5 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
1,1'-methylenebis[4-isocyanatobenzene] (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

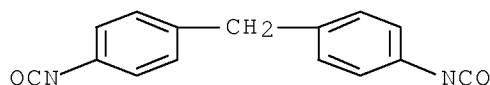
CMF C6 H4 N4 S



CM 2

CRN 101-68-8

CMF C15 H10 N2 O2



RN 74159-20-9 HCA

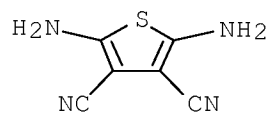
CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
1,1'-oxybis[4-isocyanatobenzene] (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8



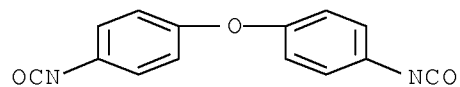
CMF C6 H4 N4 S



CM 2

CRN 4128-73-8

CMF C14 H8 N2 O3



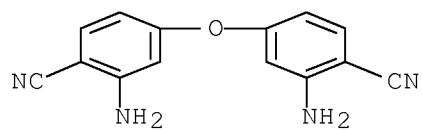
RN 75609-47-1 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
4,4'-oxybis[2-aminobenzonitrile] and 1,1'-oxybis[4-isocyanatobenzene]  
(9CI) (CA INDEX NAME)

CM 1

CRN 37705-84-3

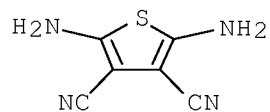
CMF C14 H10 N4 O



CM 2

CRN 17989-89-8

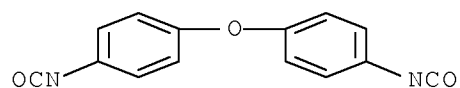
CMF C6 H4 N4 S



CM 3

CRN 4128-73-8

CMF C14 H8 N2 O3



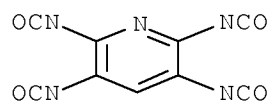
RN 75610-58-1 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
2,3,5,6-tetraisocyanatopyridine (9CI) (CA INDEX NAME)

CM 1

CRN 75610-57-0

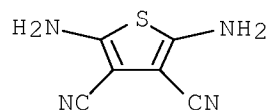
CMF C9 H N5 O4



CM 2

CRN 17989-89-8

CMF C6 H4 N4 S



IT 73417-95-5P 74159-20-9P 75609-47-1P  
75610-58-1P

(manuf. of heat-resistant, filler-contg.)

L21 ANSWER 6 OF 11 HCA COPYRIGHT 2010 ACS on STN

AN 93:47237 HCA Full-text

OREF 93:7839a,7842a

TI Effect of preparation methods on the mixed-unit nature of polyheteroarylenes

AU Chernikhov, A. Ya.; Yakovlev, M. N.; Isaeva, V. A.; Ostrovskaya, N. K.; Kotov, Yu. I.; Gefter, E. L.; Malyshev, A. I.

CS USSR

SO Plasticheskie Massy (1980), (4), 39-42

CODEN: PLMSAI; ISSN: 0554-2901

DT Journal

LA Russian

AB Polyoxadiazoles were prepd. by high-temp. polymn. of dicarboxylic acids with dihydrazides in polyphosphoric acid; poly(hydroxy amides) were prepd. by low-temp. polymn. in AcNMe<sub>2</sub> and converted to polybenzoxazoles by heating in vacuo; and the same procedure was used for prepn. of poly(cyano ureas) and cyclization to polyquinazolones. Structural heterogeneity was introduced in the formation of polymer chains as well in the cyclization steps. Polymers prepd. in soln. had the lowest heterogeneity.

IT 73417-95-5 74159-19-6 74159-20-9

74159-21-0 74159-22-1 74192-04-4

(structural heterogeneity of)

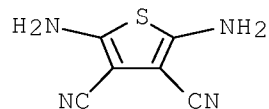
RN 73417-95-5 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with 1,1'-methylenebis[4-isocyanatobenzene] (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

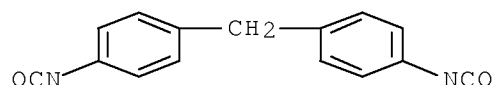
CMF C6 H4 N4 S



CM 2

CRN 101-68-8

CMF C15 H10 N2 O2



RN 74159-19-6 HCA

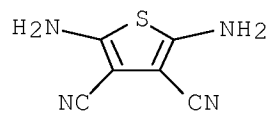
CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with

1,4-diisocyanato-2-methylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

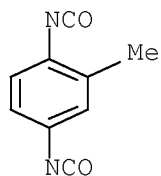
CMF C6 H4 N4 S



CM 2

CRN 614-90-4

CMF C9 H6 N2 O2



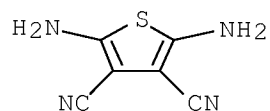
RN 74159-20-9 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
1,1'-oxybis[4-isocyanatobenzene] (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

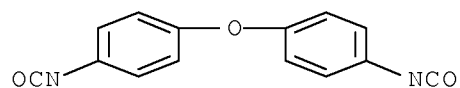
CMF C6 H4 N4 S



CM 2

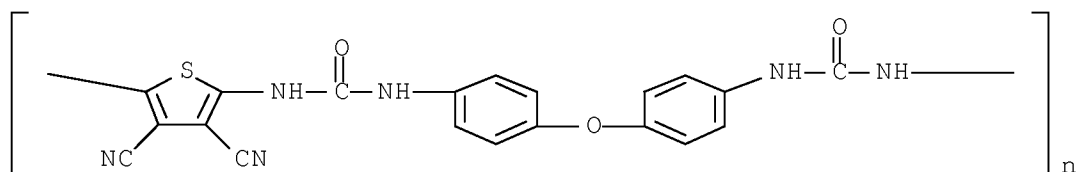
CRN 4128-73-8

CMF C14 H8 N2 O3



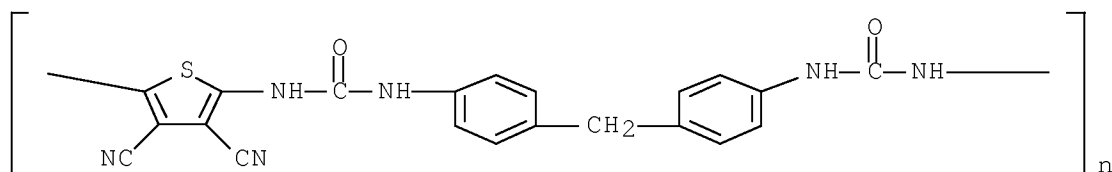
RN 74159-21-0 HCA

CN Poly[(3,4-dicyano-2,5-thiophenediyl)iminocarbonylimino-1,4-phenyleneoxy-1,4-phenyleneiminocarbonylimino] (9CI) (CA INDEX NAME)



RN 74159-22-1 HCA

CN Poly[(3,4-dicyano-2,5-thiophenediyl)iminocarbonylimino-1,4-phenylenemethylene-1,4-phenyleneiminocarbonylimino] (9CI) (CA INDEX NAME)



RN 74192-04-4 HCA

CN Poly[(3,4-dicyano-2,5-thiophenediyl)iminocarbonylimino(methyl-1,4-phenylene)iminocarbonylimino] (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 73417-95-5 74159-19-6 74159-20-9  
74159-21-0 74159-22-1 74192-04-4  
(structural heterogeneity of)

L21 ANSWER 7 OF 11 HCA COPYRIGHT 2010 ACS on STN

AN 92:199262 HCA Full-text

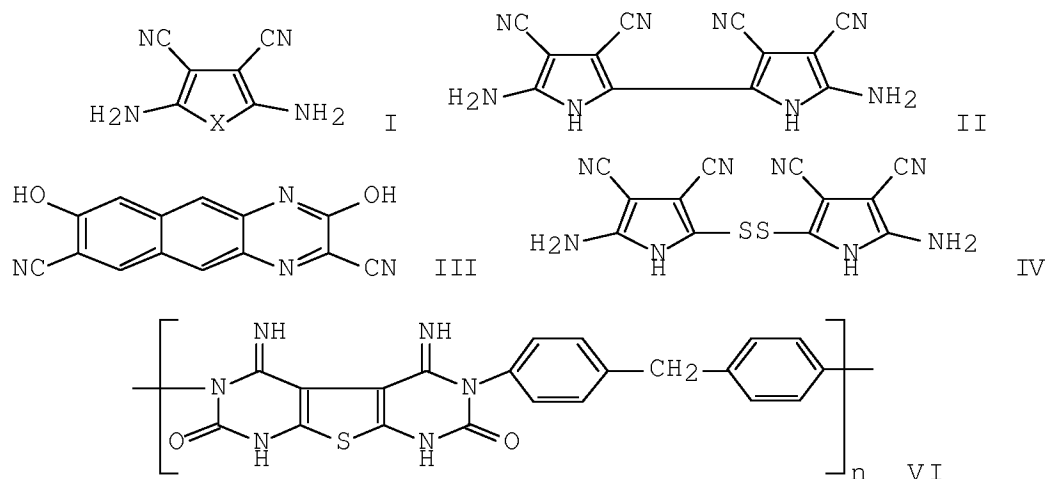
OREF 92:32299a,32302a

TI Thermostable heterocyclic polymers

IN Chernikhov, A. Ya.; Yakovlev, M. N.; Lysova, V. B.; Gefter, E. L.; Shmagina, N. N.

PA USSR  
 SO Fr. Demande, 44 pp.  
 CODEN: FRXXBL  
 DT Patent  
 LA French  
 FAN.CNT 1

|      | PATENT NO.    | KIND | DATE     | APPLICATION NO. | DATE     |
|------|---------------|------|----------|-----------------|----------|
|      | -----         | ---- | -----    | -----           | -----    |
| PI   | FR 2428654    | A1   | 19800111 | FR 1978-17665   | 19780613 |
|      | FR 2428654    | B1   | 19801121 |                 |          |
| PRAI | FR 1978-17665 |      | 19780613 |                 |          |
| GI   |               |      |          |                 |          |



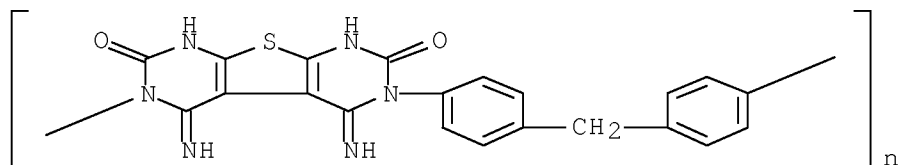
AB Copolymers with good heat resistance are prepd. by the copolymn. of polyfunctional isocyanates with compds. having  $\geq 2$  sets of a CN group and an NH<sub>2</sub> group or a CN group and a OH group attached to adjacent C atoms, e.g., I (X = S, O, NH), (H<sub>2</sub>N)<sub>2</sub>C:C(CN)<sub>2</sub>, II, 3-bromo-1,5-dicyano-2,4-benzenediol, III, a siloxane contg. Si-bonded 4-amino-3-cyanophenyl groups, 2,3-dicyano-5,6-difluoro-1,4-benzenediol, and IV. The polyisocyanates are (4-OCNC<sub>6</sub>H<sub>4</sub>)<sub>2</sub>CH<sub>2</sub> (V), (4-OCNC<sub>6</sub>H<sub>4</sub>)<sub>2</sub>O, polymethylenepolyphenylene isocyanates, (4-OCNC<sub>6</sub>H<sub>4</sub>)<sub>2</sub>P(O)CF<sub>3</sub>, 4,4'-diisocyanato-3,3',5,5'-tetraphenyl-1,1'-biphenyl, a bis(isocyanatophenyl) deriv. of decaborane, 1,3,5-triisocyanatocyclohexane, isocyanate-terminated arom. polyamides, and similar compds. The copolymn. causes the formation of heterocyclic rings from the NH<sub>2</sub> (or OH), CN, and NCO groups. Some of the 40 copolymers were prepd. in the presence of a solvent to give copolymers contg. small pores. Thus, 3.28 g I (X = S) and 5 g V were heated at 170-200° for 5 h and 300° for 0.5 h to prep. 99% copolymer VI [73417-09-1], which lost 3.2% of its wt. during 500 h at 300° in air.

IT 73417-09-1P 73417-95-5P

(prepn. and heat resistance of)

RN 73417-09-1 HCA

CN Poly[(1,4,7,8-tetrahydro-4,5-diimino-2,7-dioxothieno[2,3-d:5,4-d']dipyrimidine-3,6(2H,5H)-diyl)-1,4-phenylenemethylene-1,4-phenylene]  
(9CI) (CA INDEX NAME)



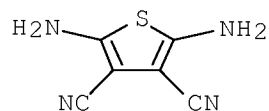
RN 73417-95-5 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
1,1'-methylenebis[4-isocyanatobenzene] (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

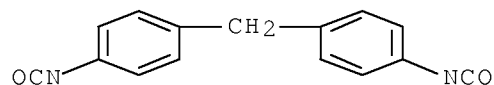
CMF C6 H4 N4 S



CM 2

CRN 101-68-8

CMF C15 H10 N2 O2



IT 73417-09-1P 73417-95-5P

(prepn. and heat resistance of)

L21 ANSWER 8 OF 11 HCA COPYRIGHT 2010 ACS on STN

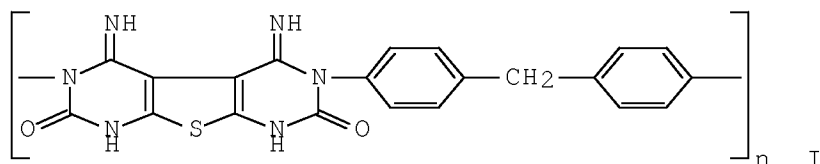
AN 92:181880 HCA [Full-text](#)

OREF 92:29489a,29492a

TI Heat-resistant heterocyclic polymers  
 IN Chernikhov, A. Ya.; Yakovlev, M. N.; Lysova, V. B.; Gefter, E. L.;  
 Shmagina, N. N.  
 PA USSR  
 SO Ger. Offen., 48 pp.  
 CODEN: GWXXBX  
 DT Patent  
 LA German  
 FAN.CNT 1

|      | PATENT NO.      | KIND | DATE     | APPLICATION NO. | DATE     |
|------|-----------------|------|----------|-----------------|----------|
| PI   | DE 2825395      | A1   | 19800110 | DE 1978-2825395 | 19780609 |
|      | US 4347348      | A    | 19820831 | US 1980-161381  | 19800620 |
| PRAI | US 1978-912541  | A1   | 19780605 |                 |          |
|      | DE 1978-2825395 |      | 19780609 |                 |          |

GI



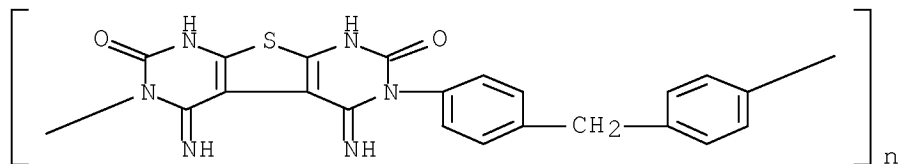
AB Heat-resistant heterocyclic polymers are prepd. by reaction of bis(amino or hydroxy nitriles) (with OH or NH<sub>2</sub> groups in alpha, beta, ortho, and/or peri relation to CN) with polyisocyanates. Thus, 3.28 g 2,5-diamino-3,4-dicyanothiophene and 5 g diphenylmethane-4,4'-diisocyanate were mixed under Ar and heated 2 h at 170-90°, 1 h at 200°, and 30 min at 300° to give I [73417-09-1], which suffered a wt. loss of 3.2% in 500 h at 300°.

IT 73417-09-1P 73417-95-5P

(manuf. of heat-resistant)

RN 73417-09-1 HCA

CN Poly[(1,4,7,8-tetrahydro-4,5-diimino-2,7-dioxothieno[2,3-d:5,4-d']dipyrimidine-3,6(2H,5H)-diyl)-1,4-phenylenemethylene-1,4-phenylene]  
 (9CI) (CA INDEX NAME)

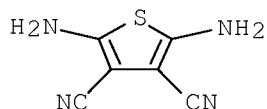




RN 73417-95-5 HCA  
CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
1,1'-methylenebis[4-isocyanatobenzene] (9CI) (CA INDEX NAME)

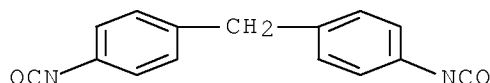
CM 1

CRN 17989-89-8  
CMF C6 H4 N4 S



CM 2

CRN 101-68-8  
CMF C15 H10 N2 O2



IT 73417-09-1P 73417-95-5P  
(manuf. of heat-resistant)

~~L21~~ ~~ANSWER 9 OF 11~~ HCA COPYRIGHT 2010 ACS on STN

AN 77:20092 HCA Full-text

OREF 77:3374h,3375a

TI Synthesis, thermal stability, and electrical properties of deeply  
colored polymers with anellated phthalocyanine-like systems

AU Woehrle, Dieter; Kossmehl, Gerhard; Manecke, Georg

CS Inst. Org. Chem., Freie Univ. Berlin, Berlin-Dahlem, Fed. Rep. Ger.

SO Makromolekulare Chemie (1972), 154, 111-20

CODEN: MACEAK; ISSN: 0025-116X

DT Journal

LA German

AB A 2,5-diamino-3,4-dicyanothiophene-terephthaloyl chloride copolymer (I)  
[35065-03-3] and a  
2,5-diamino-3,4-dicyanothiophene-2,5-diformylthiophene copolymer (II)  
[35065-04-4] are prepd. A phthalocyanine-like system formed on I and II by  
treatment with phthalonitrile and Cu acetylacetonate increases the heat  
resistance and elec. cond. of both polymers. The elec. cond. is detd. in a  
cell constructed for use in any gas or in vacuo at <150.deg..

IT 35065-03-3D, 1,4-Benzenedicarbonyl dichloride, polymer with

2,5-diamino-3,4-thiophenedicarbonitrile, reaction products with copper  
acetylacetonate and phthalonitrile 35065-04-4D,  
3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
2,5-thiophenedicarboxaldehyde, reaction products with copper  
acetylacetonate and phthalonitrile  
(elec. and thermal properties of)

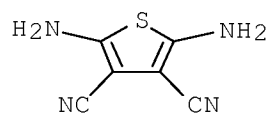
RN 35065-03-3 HCA

CN 1,4-Benzenedicarbonyl dichloride, polymer with  
2,5-diamino-3,4-thiophenedicarbonitrile (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

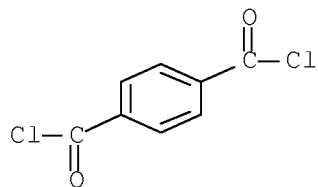
CMF C6 H4 N4 S



CM 2

CRN 100-20-9

CMF C8 H4 Cl2 O2



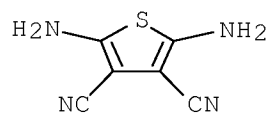
RN 35065-04-4 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
2,5-thiophenedicarboxaldehyde (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

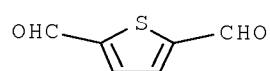
CMF C6 H4 N4 S



CM 2

CRN 932-95-6

CMF C6 H4 O2 S



IT 35065-03-3P 35065-04-4P 37130-73-7P  
37130-74-8P

(prepn. of)

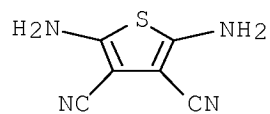
RN 35065-03-3 HCA

CN 1,4-Benzenedicarbonyl dichloride, polymer with  
2,5-diamino-3,4-thiophenedicarbonitrile (9CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

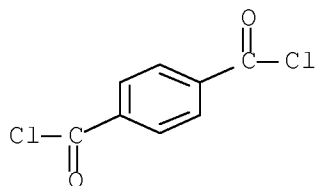
CMF C6 H4 N4 S



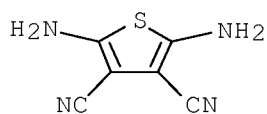
CM 2

CRN 100-20-9

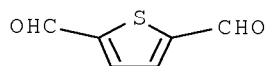
CMF C8 H4 Cl2 O2



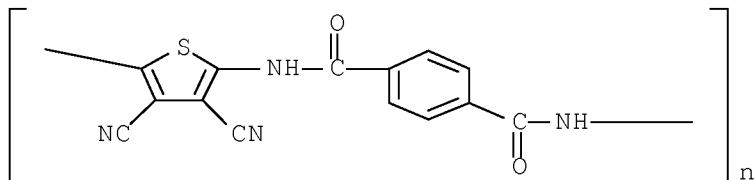
RN 35065-04-4 HCA  
 CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with  
 2,5-thiophenedicarboxaldehyde (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 17989-89-8  
 CMF C6 H4 N4 S



CM 2  
 CRN 932-95-6  
 CMF C6 H4 O2 S

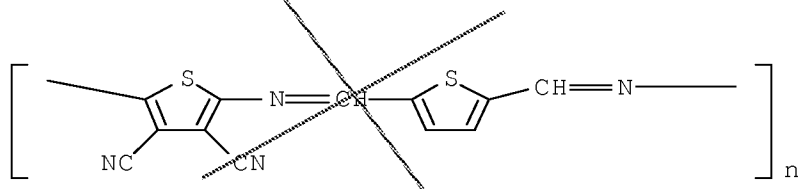


RN 37130-73-7 HCA  
 CN Poly[(3,4-dicyano-2,5-thiophenediyl)iminocarbonyl-1,4-  
 phenylenecarbonylimino] (9CI) (CA INDEX NAME)



RN 37130-74-8 HCA

CN Poly[(3,4-dicyano-2,5-thiophenediyl)nitrilomethylidyne-2,5-thiophenediylmethylidynenitrilo] (9CI) (CA INDEX NAME)



IT 35065-03-3D, 1,4-Benzenedicarbonyl dichloride, polymer with 2,5-diamino-3,4-thiophenedicarbonitrile, reaction products with copper acetylacetonate and phthalonitrile 35065-03-3D, 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with 1,4-benzenedicarbonyl dichloride, reaction products with copper acetylacetonate and phthalonitrile 35065-04-4D, 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with 2,5-thiophenedicarboxaldehyde, reaction products with copper acetylacetonate and phthalonitrile 35065-04-4D, 2,5-Thiophenedicarboxaldehyde, polymer with 2,5-diamino-3,4-thiophenedicarbonitrile, reaction products with copper acetylacetonate and phthalonitrile

(elec. and thermal properties of)

IT 35065-03-3P 35065-04-4P 37130-73-7P 37130-74-8P

(prepn. of)

L21 ANSWER 10 OF 11 HCA COPYRIGHT 2010 ACS on STN

AN 70:58502 HCA Full-text

OREF 70:11015a,11018a

TI Synthesis and semiconducting properties of some complexes and their polymeric products. III. Polymers with hemiporphyrizine structure

AU Manecke, Georg; Woehrle, Dieter

CS Fritz-Haber-Inst., Max-Planck-Ges., Berlin-Dahlem, Fed. Rep. Ger.

SO Makromolekulare Chemie (1968), 120, 192-209

CODEN: MACEAK; ISSN: 0025-116X

DT Journal

LA German

AB Polymers with a hemiporphyrizine structure were prepd. by refluxing tetracyano compds. with diamines in a 1:2 molar ratio in high-boiling solvents. A mixt. of 1.068 g. tetracyanobenzene and 1.309 g. 2,6-diaminopyridine (I) in 10 ml.  $\alpha$ -chloronaphthalene was refluxed under N to give 2.2 g. dark-brown polymer. A mixt. of 443 mg. Cu bis(1,2-dicyanoethylene - 1,2-dithiolo)cuprate(II) dihydrate (II) and 218 mg. I were heated under N at 275° to give 500 mg. polymer (III). Similar results were obtained with I and II in the presence of Cu acetylacetonate. Metals could also be added to the finished polymer. A polymer prepd. from tetracyanothiophene and I was suspended in 30 ml. HCONMe<sub>2</sub> and refluxed 8 hrs. under N in the presence of 150 mg. CuCl<sub>2</sub>. The resultant polymer

contained 7.8% Cu. Heating 300 mg. 2,5-diamino-3,4-dicyanothiophene under N at 250° gave 250 mg. polymer (IV). Cu could also be introduced into IV. The structure of the polymers was detd. by elemental anal. and ir spectroscopy. The cond. of III varied between  $2.3 \times 10^{-4}$  and  $7.2 \times 10^{-14}$  ohm<sup>-1</sup> cm.<sup>-1</sup>, while IV with and without CuCl<sub>2</sub> had cond.  $<7.1 \times 10^{-3}$  ohm<sup>-1</sup> cm.<sup>-1</sup>

IT 28264-36-0

(elec. cond. of)

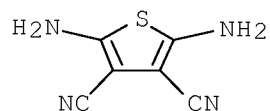
RN 28264-36-0 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with copper chloride (CuCl<sub>2</sub>) (8CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

CMF C6 H4 N4 S



CM 2

CRN 7447-39-4

CMF Cl2 Cu

Cl-Cu-Cl

IT 28264-32-6P

(prepn. of)

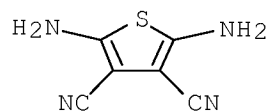
RN 28264-32-6 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymers (8CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

CMF C6 H4 N4 S



IT 28264-36-0

(elec. cond. of)

IT 28264-32-6P

(prepn. of)

OSC.G 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)

L21 ANSWER 11 OF 11 HCA COPYRIGHT 2010 ACS on STN

AN 69:52669 HCA Full-text

OREF 69:9859a,9862a

TI Some macromolecular semiconductors with porphyrazine structure

AU Manecke, G.; Woehrle, D.; Kossmehl, G.

CS Fritz-Haber-Inst., Max-Planck-Ges., Berlin-Dahlem, Fed. Rep. Ger.

SO Journal of Polymer Science, Polymer Symposia (~~1968~~), Volume

Date 1967, No. 22(Pt. 1), 463-75

CODEN: JPYCAQ; ISSN: 0360-8905

DT Journal

LA German

AB Polymers with a structure similar to phthalocyanine were made by melting of tetracyanothiophene (I), tetracyanofuran (II), octacyano-P,P,P-triphenylphospholidine (III), tetramethylbis(maleonitriledithiolato)cuprate (IVa), and copper bis(maleonitriledithiolato)cuprate (IVb) with copper acetylacetonate and with other metal acetylacetonates in different molar ratios and with o-phthalodinitrile (V). The conductivities at a pressure of 1500 kp. cm.<sup>-2</sup> were in the range of  $5.7 \times 10^{-5}$  to  $10^{-14}$  ohm<sup>-1</sup> cm.<sup>-1</sup> The conductivities decreased with decreasing aromatic character of the starting nitriles. In some cases of polychelates with two different incorporated metals, conductivities were higher than expected from the two unimetalated polychelates. For various metal polychelates of I there seems to be a relation between the conductivities and the ionization potentials and the ionic radii of the metals. Measurements of the thermal emf. showed p-conduction. Seebeck coeffs. were independent of the temp. for the polychelates made from I and II and were dependent on the temp. for the polychelates made from III. A certain polychelate made from III had a thermal emf. of 40 mv. for  $\Delta T = 30^\circ$ . Polymers with a structure similar to tetraazadiarylenediisoindolenine were obtained by fusion of I with p-phenylenediamine, and of I, IVa, IVb, and nickel bis(maleonitriledithiolato)cuprate (IVc) with 2,6-diaminopyridine and by melting of 2,5-diamino-3,4-dicyanothiophene with or without CuCl<sub>2</sub>. The structure was proved by elementary anal. and by ir spectroscopy. The conductivities were in the range of  $7.1 \times 10^{-3}$  to  $1.0 \times 10^{-9}$  ohm<sup>-1</sup> cm.<sup>-1</sup> The polymers made from IVb and IVc showed smaller conductivities than did those from IVb and IVc.

IT 28264-32-6 28264-36-0

(elec. cond. of)

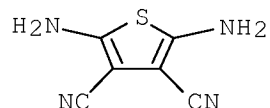
RN 28264-32-6 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymers (8CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

CMF C6 H4 N4 S



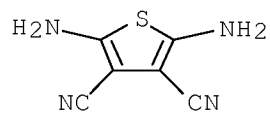
RN 28264-36-0 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino-, polymer with copper chloride (CuCl<sub>2</sub>) (8CI) (CA INDEX NAME)

CM 1

CRN 17989-89-8

CMF C6 H4 N4 S



CM 2

CRN 7447-39-4

CMF Cl<sub>2</sub> Cu

Cl—Cu—Cl

IT 28264-32-6 28264-36-0  
(elec. cond. of)

=> D L22 1-3 BIB ABS HITSTR HITIND RE

L22 ANSWER 1 OF 3 HCA COPYRIGHT 2010 ACS on STN

AN 142:47945 HCA [Full-text](#)

TI Synthesis, characterization, and dc electrical conductivity of some oligomer metal complexes

AU El-Shekeil, Ali; Al-Khader, Mohammed; Abu-Bakr, Abeer O.



CS Chemistry Department, Faculty of Science, Sana'a University, Sana'a,  
Yemen

SO Journal of Macromolecular Science, Pure and Applied Chemistry (   
2004), A41(11), 1267-1284  
CODEN: JSPCE6; ISSN: 1060-1325

PB Marcel Dekker, Inc.

DT Journal

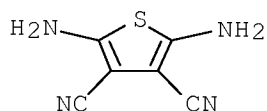
LA English

AB The synthesis of the oligomer metal complexes was carried out systematically starting from condensing terephthaldehyde with 2,5-diamino-3,4-dicyanothiophene in DMF. The di-thienylene phenylene (di-TBT) oligomer complexes with the metal salts of Fe, Co, Ni, Cu, Zn, Cd, or Hg to give di-TBT metal complex [M(TBT)2]. For comparison, the metal ion in the complex was substituted with a phenylene ring by reacting terephthaldehyde with thienylene phenylene (TBT) to get the seven ring product B(TBT)2. The presence of different transition metals and B(TBT)2 allowed the comparison of the chem. and phys. properties. These six ring metal complexes were characterized through the study of FTIR and electronic spectra in addn. to the elemental analyses and metal content. A comparative study of DC elec. cond. of the intrinsic and 5% I2 doped materials with temp. variation in the range 300-500 K allowed tracing the action of the different transition metals and phenylene ring on the DC elec. cond. P 721402-82-0P 721402-83-1P.

IT 17989-89-8, 2,5-Diamino-3,4-dicyanothiophene  
(dc elec. cond. of thienylene phenylene oligomer metal complexes)

RN 17989-89-8 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino- (CA INDEX NAME)



CC 78-7 (Inorganic Chemicals and Reactions)  
Section cross-reference(s): 76

IT Annealing  
Conducting polymers  
Doping  
Electric conductivity  
(dc elec. cond. of thienylene phenylene  
oligomer metal complexes)

IT 623-27-8, Terephthalic aldehyde 7439-97-6D, Mercury, salt  
7440-02-0D, Nickel, salt 7440-43-9D, Cadmium, salt 7440-48-4D,  
Cobalt, salt 7440-50-8D, Copper, salt 7440-66-6D, Zinc, salt  
7720-78-7 17989-89-8, 2,5-Diamino-3,4-dicyanothiophene  
(dc elec. cond. of thienylene phenylene oligomer metal complexes)

RE CITED REFERENCES

(1) Anon; Electronic Properties of Polymers 1982

(2) Anon; Handbook of Organic Conductive Molecules and Polymers 1997, V2

- (3) Anon; Springer Series in Solid State Science 1992, V102
- (4) Anon; Springer Series in Solid-State Sciences 1985, V63
- (5) Archer, R; Inorganic and Organometallic Polymers 2001
- (6) Destri, S; Macromolecules 1999, V32, P353 HCA
- (7) El-Shekeil, A; Europ Polym J 2001, V37, P575 HCA
- (8) El-Shekeil, A; Polym Int 1997, V42, P39 HCA
- (9) El-Shekeil, A; Synthesis, characterization and DC electrical conductivity of some oligomer mixed metal complexes, synthetic metals 2004, V143(2), P147 HCA
- (10) Patil, M; Chem Acta 1986, V118, P33
- (11) Patil, M; Makromol Chemie 1981, V97, P69
- (12) Rabjohn, N; Organic Synthesis 1963, VIV, P243
- (13) Wang, C; Macromolecules 1996, V29, P3147 HCA

L22 ANSWER 2 OF 3 HCA COPYRIGHT 2010 ACS on STN

AN 93:114248 HCA Full-text

OREF 93:18281a,18284a

TI Organic semiconductors based on diaminodicyanothiophene and diaminodicyanoselenophene

AU Wudl, F.; Zellers, E. T.; Nalewajek, D.

CS Bell Lab., Murray Hill, NJ, 07974, USA

SO Journal of Organic Chemistry (~~1980~~), 45(16), 3211-15

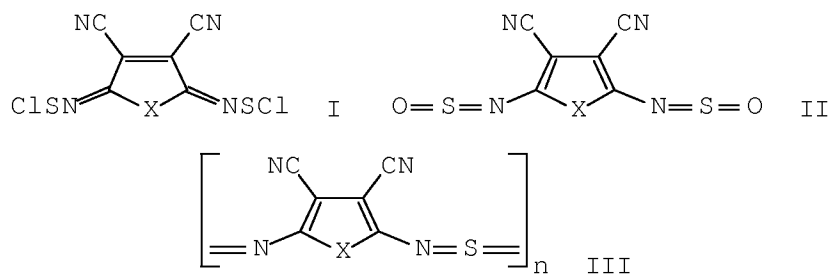
CODEN: JOCEAH; ISSN: 0022-3263

DT Journal

LA English

OS CASREACT 93:114248

GI



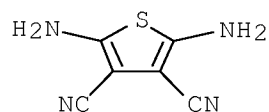
AB Several new derivs. of 2,5-diamino-3,4-dicyanothiophene and 2,5-diamino-3,4-dicyanoselenophene, e.g., I (X = S, Se) were prepd. and converted to **conducting polymers**. The sulfinyl deriv. II was also prepd. and converted to a **conducting polymer**, e.g., III.

IT 17989-89-8

(reaction of, with thionyl chloride or sulfur dichloride)

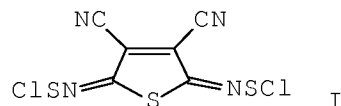
RN 17989-89-8 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino- (CA INDEX NAME)



CC 27-12 (Heterocyclic Compounds (One Hetero Atom))  
 Section cross-reference(s): 76  
 ST semiconductor diaminodicyanothiophene diaminodicyanoselenaphene;  
 selenophene diaminodicyano prepn semiconductor; thiophene  
 diaminodicyano prepn semiconductor; **polymer**  
**conducting** diaminodicyanothiophene diaminodicyanoselenophene  
 IT **Polymers**, preparation  
 (conducting, prepn. of, from diaminodicyanothiophene and  
 diaminodicyanoselenophene)  
 IT 74007-36-6P 74007-37-7P 74007-39-9P 74007-40-2P  
 (prepn. and conversion of, to **conducting polymers**  
 )  
 IT 110-86-1, reactions  
 (reaction of, with disulfinyldiaminodicyano derivs. of thiophene  
 and selenophene, **conducting polymers** from)  
 IT 17989-89-8  
 (reaction of, with thionyl chloride or sulfur dichloride)  
 OSC.G 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

L22 ANSWER 3 OF 3 HCA COPYRIGHT 2010 ACS on STN  
 AN 93:47253 HCA Full-text  
 OREF 93:7839a,7842a  
 TI 2,5-Di-N-chlorothioimino-3,4-dicyanothiophene: a novel monomer of  
 unusual molecular and solid-state structure  
 AU Wudl, F.; Zellers, E. T.  
 CS Bell Lab., Murray Hill, NJ, 07974, USA  
 SO Journal of the American Chemical Society (1980), 102(12),  
 4283-4  
 CODEN: JACSAT; ISSN: 0002-7863  
 DT Journal  
 LA English  
 GI

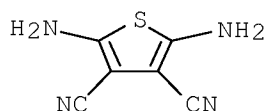


AB The title compd. (I) [74007-39-9] was prepd. by the reaction of 2,5-diamino-3,4-thiophenedicarbonitrile [17989-89-8] with SCl<sub>2</sub>, and its crystal structure was detd. The solid-state structure has uniform stacks along the a axis and sheets along the b-c plane. I is stable to the atm. in the solid state, but is unstable in polar or Lewis basic solvents. The reaction of I with Bu<sub>4</sub>N<sup>+</sup>I<sup>-</sup> gives I polymer Bu<sub>4</sub>N salt with compaction cond. 260 Ω-cm, which can be converted to I polymer TTF salt, compaction cond. 19 Ω-cm.

IT 17989-89-8  
(reaction of, with sulfur dichloride)

RN 17989-89-8 HCA

CN 3,4-Thiophenedicarbonitrile, 2,5-diamino- (CA INDEX NAME)



CC 35-3 (Synthetic High Polymers)  
Section cross-reference(s): 27, 75, 76

ST thiophenedicarbonitrile bischlorothioimino; crystal structure  
bischlorothioiminothiophenedicarbonitrile;  
chlorothioiminothiophenedicarbonitrile; elec cond  
polymer heterocyclic; aminothiophenedicarbonitrile reaction  
sulfur chloride

IT 10549-76-5D, salts with 2,5-bis[(chlorothio)imino]-3,4-thiophenedicarbonitrile polymer anionic derivs.  
35079-56-2D, salts with 2,5-bis[(chlorothio)imino]-3,4-thiophenedicarbonitrile polymer anionic derivs.  
74345-09-8D, anionic derivs., salts  
(elec. cond. of)

IT 17989-89-8  
(reaction of, with sulfur dichloride)

OSC.G 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)

=> D L26 1 BIB ABS HITSTR HITIND RE

L26 ANSWER 1 OF 1 HCA COPYRIGHT 2010 ACS on STN

AN 141:115917 HCA Full-text

TI Synthesis, characterization and dc electrical conductivity of some oligomer mixed metal complexes

AU El-Shekeil, Ali; Al-Khader, Mohammed; Abu-Bakr, Abeer O.

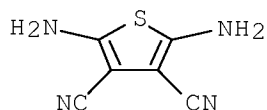
CS Faculty of Science, Chemistry Department, Sana'a University, Sana'a, 12463, Yemen

SO Synthetic Metals (2004), 143(2), 147-152  
CODEN: SYMEDZ; ISSN: 0379-6779

PB Elsevier Science B.V.

DT Journal

LA English  
 OS CASREACT 141:115917  
 AB The synthesis of the oligomer metal complexes was systematically carried out in three steps starting from condensing terephthalaldehyde with 2,5-diamino-3,4-dicyanothiophene in DMF. Dithienylenephenylene (TBT) produced was complexed with Cu acetate to give di-TBT Cu complex [Cu(TBT)<sub>2</sub>] (1). 1 Was reacted with a metal salt to give the 12-ring tri-metal oligomer M[Cu(TBT)<sub>2</sub>]<sub>2</sub>, where M is Co, Ni, or Cu. The presence of different transition metal ions allowed the comparison of the chem. and phys. properties of the mixed metal complexes. The 12-ring mixed metal complexes were characterized through a comparative study of FTIR, electronic spectra and thermal analyses (TGA and DSC) in addn. to the elemental analyses and metal content. A comparative study of the d.c. elec. cond. in its intrinsic and 5% I<sub>2</sub>-doped states with temp. variation in the range 300-500 K allowed tracing the action of the three different transition metals on the d.c. elec. cond. of the mixed metal complexes.  
 IT 17989-89-8, 2,5-Diamino-3,4-dicyanothiophene  
 (for prepn. of dithienylenephenylene)  
 RN 17989-89-8 HCA  
 CN 3,4-Thiophenedicarbonitrile, 2,5-diamino- (CA INDEX NAME)



CC 78-7 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 27, 76  
 ST transition metal dithienylenephenylene prepn elec  
 cond thermal decompn  
 IT Activation energy  
 (elec. cond.; of transition metal complexes  
 with dithienylenephenylene)  
 IT Electric conductivity  
 Thermal decomposition  
 (of transition metal complexes with dithienylenephenylene)  
 IT Transition metal complexes  
 (prepn., thermal decompn. and elec. cond. of  
 copper, cobalt and nickel complexes with dithienylenephenylene)  
 IT 623-27-8, 1,4-Benzenedicarboxaldehyde 17989-89-8,  
 2,5-Diamino-3,4-dicyanothiophene  
 (for prepn. of dithienylenephenylene)  
 IT 721402-81-9P 721402-82-0P 721402-83-1P  
 (prepn., thermal decompn. and elec. cond. of  
 undoped and elec. cond. of iodine doped)  
 IT 721402-80-8P  
 (prepn., thermal decompn., elec. cond. and  
 reaction with transition metal anions and elec.  
 cond. of iodine doped)

RE CITED REFERENCES

- (1) Anon; Organic Semiconducting Polymers 1968
  - (2) Anon; Springer, Series in Solid State Science 1992, V102, P135
  - (3) Brown, M; Introduction to Thermal Analysis 1988
  - (4) Chandra, R; Rubber and Plastic Technology 1995, P185
  - (5) Cott, D; US 4832869 1989 HCA
  - (6) Destri, S; Macromolecules 1998, V31, P1079 HCA
  - (7) Destri, S; Macromolecules 1999, V32, P353 HCA
  - (8) Destri, S; Opt Mater 1998, V9, P411 HCA
  - (9) Destri, S; Synth Met 1995, V75, P25 HCA
  - (10) Destri, S; Synth Met 1995, V69, P287 HCA
  - (11) Dietrich, M; Synth Met 1991, V41, P503 HCA
  - (12) D'Alelio, G; J Macromol Sci Rev Macromol Chem 1969, V3, P105 HCA
  - (13) El-Shekeil, A; Eur Polym J 2001, V37, P575 HCA
  - (14) El-Shekeil, A; J Inorg Organomet Polym 1997, V7, P121 HCA
  - (15) El-Shekeil, A; Polymer 1999, V40, P2879 HCA
  - (16) El-Shekeil, A; Trans Met Chem 1992, V17, P420 HCA
  - (17) Hartel, M; De Ang Makromol Chemie 1978, V29/30, P307
  - (18) Khalid, M; Eur Polym J 2002, V37, P1433
  - (19) Li, X; Eur Polym J 1991, V27, P1345 HCA
  - (20) Olinga, T; Macromolecules 1998, V31, P1070 HCA
  - (21) Park, S; Macromolecules 1993, V26, P1627 HCA
  - (22) Patil, A; Chem Rev 1988, V88, P192
  - (23) Rabjohn, N; Organic Synthesis 1963, VIV, P234
  - (24) Rastogi, D; J Inorg Nucl Chem 1967, V36, P2219
  - (25) Spangler, C; Polymer 1989, V30, P1166 HCA
  - (26) Su, Z; Chin Sci Bull 1993, V38, P732 HCA
  - (27) Wang, C; Macromolecules 1996, V29, P3147 HCA
- OSC.G 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD (7 CITINGS)